ORIGINAL ARTICLE

OPEN ACCESS

Factors Associated with Postpartum Depression among Mothers Visiting a University Hospital in Western Nepal

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Submitted 12 August 2022 **Accepted** 15 December 2022 **Published** 30 January 2023

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Citation

"*Priyanka J, Shrestha S, Ranjan S, Kumar A, & Chhetri P, Factors associated with postpartum depression among mothers visiting a University Hospital in Western Nepal. JBPKIHS. 2022;5(2):4-9*"

https://doi.org/10.3126/jbpkihs.v5i2.47052

Abstract

Background: Postpartum depression (PPD) is a grave problem posing various complications in mothers and their children. We aimed to assess the prevalence and predictors of PPD among women attending a university hospital in western Nepal.

Methods: This institution based cross-sectional study enrolled 218 postpartum (< 12 weeks post-delivery) mothers either admitted in the in-patient-units of Obstetrics department or visiting Immunization clinics from February to July 2020. Purposive sampling technique was used. The presence of PPD was assessed by using Nepali version of Edinburgh Post-partum Depression Scale. A face-to-face interview was conducted. Mothers with mental disorders, hearing impairment and migrants were excluded. The predictors of PPD were determined by multivariate analysis.

Results: PPD affected 39% of women. Multivariate binary logistic analysis showed that PPD was associated with nuclear family (AOR: 6.74, 95% CI: 3.00-15.12), husband consuming alcohol (AOR: 2.47, 95% CI: 1.18-5.18), and preference of boy child (AOR: 2.93, 95% CI: 1.32-6.50). However, planned pregnancy (AOR: 0.23, 95% CI: 0.11-0.47), vaginal delivery (AOR: 0.37; 95% CI: 0.17-0.81), male baby (AOR: 0.33; 95% CI: 0.16-0.68), and presence of husband throughout pregnancy (AOR: 0.31; 95% CI: 0.10-0.92) were found to be negatively associated with PPD.

Conclusion: The prevalence of PPD was common and was positively associated with nuclear family, male child preference and alcohol consuming husband and negatively associated with planned pregnancy, vaginal delivery, male baby, and presence of husband throughout pregnancy

Keywords: Edinburgh Post-partum Depression Scale; Nepal; Post-partum depression.

Declarations

Ethics approval and consent to participate: Ethical approval was obtained from the Universal College of Medical Sciences and Teaching Hospital review committee (Ref. No.: UCMS/IRC/238/19).

Consent for publication: The study was explained to the participants and written informed consent with a sign or thumbprint was obtained from each participant for data collection.

Availability of data and materials: The full data set supporting this research is available upon request by the readers.

Competing interest: None

Funding: None.

Authors' contributions: PJ: concept, literature search, preparation of manuscript. SS: data collection, statistical analysis, data interpretation. SR: data collection, statistical analysis, data interpretation. KA: interpretation of result, manuscript review. CP: interpretation of result, manuscript review. All the authors have read and approved the final manuscript.

Acknowledgements: The authors would like to express their greatest appreciation to all the respondents for their valuable time in participating in the study. The authors are grateful to UCMS, Bhairahawa, for providing a platform and supporting the data collection for this study..

Mental health problems like depression, anxiety, stress, fatigue, psychosis contributes to 7% of the global burden of disease among women of reproductive age [1, 2]. Postpartum depression (PPD) is a common complication of childbearing, occurring in 10 - 15% of women [3]. Physiological and psychological changes related to pregnancy and childbirth predisposes to PPD [4]. It involves anxiety, loss of enjoyment, sadness, and fatigue after childbirth [5]. Its global prevalence ranges from 3.5% to 33%, depending on the type, severity, and time since delivery [6].

PPD affects not only mothers bonding with the child but also her relationship with other family members [7]. Serious long-term adverse effects of PPD on mothers include suicide, economic loss, and inadequate antenatal care. The newborns of mothers with PPD are more likely to suffer from delayed growth, irritability and poor performance.

The National Demographic Health Survey (NDHS) data reflects that Nepal has made a substantial progress in improving access to maternal health care and reducing maternal mortality [8, 9]. However, the provisions for maternal mental illness still remains poor [10]. Women in Nepal are still prone to three delays in seeking, reaching and receiving maternal care [11]. This increases the high chance of neglecting PPD as an actual health problem. Nevertheless, very limited studies have explored the potential risk factors of PPD across different cultural and socio-economic contexts within Nepal [12]. Only a limited number of studies have assessed depressive symptoms among women living in low land (Terai region) where the half of the Nepalese population resides [13].

Therefore, this study aims to find the prevalence of PPD and its associated factors among mothers visiting a university hospital in western Nepal. The finding of this study may help health care professional to have a better understanding of PPD and assist in planning proper strategies for its prevention, screening, and treatment.

METHODS

This cross-sectional study was conducted at the Universal College of Medical Science (UCMS), located in western Nepal. All post-partum mothers < 12 weeks who visited the immunization clinic or gynecology/ obstetric in-patient unit from February to July 2020 at UCMS were enrolled. Mothers diagnosed to have mental disorders or hearing impairment, migrants, or those unwilling to participate were excluded. Planned pregnancy was defined as pregnancy with joint decision made by husband and wife.

The sample size of 198 was calculated using the previously reported prevalence of post-partum depression as 15.2% and 5% allowable error [14]. Adding a 10% of non-response rate, the final sample size was 218.

Purposive sampling technique was used. A face-to-face interview was conducted using a structured questionnaire. All sets of questionnaires were translated into Nepali and translated back into English with the help of independent experts. English version was compared for its correctness. The instrument was pretested in 10% of the population in a similar hospital in Lumbini Province. The necessary modifications were done after pretesting. The questionnaire consisted of socio-demographic, maternal, and obstetric variables.

For the diagnosis of PPD, the validated Nepali version of Edinburgh Post-partum Depression Scale (EPDS) was used, where the sensitivity, specificity, positive predictive value, and negative predictive value was found to be 92, 95.6, 77 and 99.3 % respectively. The best cut-off point of EPDS for screening of PPD was found to be 12/13 and the area of the curve was 0.98 (95 % CI: 0.970 - 0.994, p = 0.001). The EPDS tool has been validated and used in different cultural settings, including Nepal. It is a ten-item self-reporting scale consisting of questions on clinical symptoms of depression such as guilt feeling, sleep disturbance, low energy, suicidal ideation, etc experienced within the last seven days. Each statement is rated on a scale from 0 - 3 (from “Yes, most of the time”, to “No, Not at all”) resulting in a total possible score ranging from 0 - 30. Mothers with a scale scoring 13 or more were screened for possible PPD. In Nepal, the validation of the Nepalese version of the EPDS study showed good validity and was recommended to use in Nepal for the screening of PPD [15]. The cut-off score ≥ 13 was used in this study. A psychiatrist and a postgraduate student were involved as a consultant in this study. All the filled questionnaires were reviewed and checked for errors by the principal investigator. Privacy and confidentiality were maintained.

Data were entered in an excel sheet and exported to Statistical package for social science (SPSS) software version 21 for analysis. The variables such as age of post-partum mother were described using mean and standard deviation. Bivariate analysis was carried out to find

the association between dependent and independent variables. The measure of association was calculated by the odds ratio and a 95% confidence interval (CI) to determine statistical significance. Variables that were found to be associated with bivariate analysis were further assessed with multivariate analysis to identify the key factors associated with postpartum depression.

Ethical approval was obtained from the Universal College of Medical Sciences and Teaching Hospital review committee. The study was explained to the participants and written informed consent was obtained from each participant.

RESULTS

A total of 218 mothers were enrolled and their mean age was 25.5 ± 4.7 years. The majority (n = 139, 63.8%) were 20 - 29 years of age. The age at marriage and 1st childbirth (mean ± SD) were 20.43 ± 3.94 years and 22.6 ± 4.09 years respectively. The majority (80%) married at 16 - 25 years. Similarly, half of the respondents delivered their first child at the age of 21 - 25 years. One hundred and forty four (66.1%) respondents had planned pregnancy. More than half of the respondents 121 (55.5%) gave birth to a girl child. Only 20% of the baby had low birth weight. Most of the respondent's husbands were present throughout the pregnancy 192 (88.1%).

The prevalence of PPD was found to be 39% (n = 85) **(Fig 1)**. Socio-demographic factors found to be associated with PPD were age of the respondent, educational status of the respondent and husband, type of family, alcohol consumption by the husband which was further tested by multivariate analysis. The multivariate analysis found that literate mothers were 48% less likely to have PPD as compared to illiterate mothers (AOR: 0.52; 0.23-1.17). Mothers of the nuclear family were 6.74 times more likely to have PPD as compared to joint family (AOR: 6.7; 3.00-15.12). Mothers whose husbands consumed alcohol were 2.47 times more likely to have PPD as compared to mothers whose husbands did not consume alcohol (AOR: 2.47; 1.18-5.18) **(Table 1)**.

Maternal and obstetric factors found to be associated with PPD were type of delivery, pregnancy planned, sex of the child, birth weight, low birth weight history, abortion, and child preference by the family and husband present during the pregnancy which was further tested by multivariate analysis. The multivariate regression analysis showed that women who had normal delivery were 63% less likely to have PPD than those who delivered through C-section (AOR: 0.37; 0.17 - 0.81). Mothers who had planned pregnancies were 77% less likely to have PPD as compared to mothers who did not have their pregnancy planned (AOR: 0.22; 0.11 - 0.47). Mothers who had given birth to a male child were 67% less likely to have PPD as compared to mothers who gave birth to a female child (AOR: 0.33; 0.16 - 0.68). Mothers whose family preference was son and daughter were 2.93 (CI: 1.32 - 6.50) and 1.5 (CI: 0.54 - 4.17) times respectively, more likely to have PPD as compared to the family whose preference was to have any child. Mothers whose husbands were present throughout the time of pregnancy were 68% less likely to have PPD than mothers whose husbands were absent throughout pregnancy period (AOR: 0.31; 0.10-0.92) **(Table 2)**.

DISCUSSION

This hospital-based cross-sectional study aimed to assess the prevalence and associated factors of depression among postpartum women visiting a university hospital in western Nepal, which is a 750 bedded private hospital serving 12 districts of western Nepal with a catchment population of 5,124,225. The prevalence of post-partum depression was found to be 39%. In older studies, the prevalence of PPD in Nepal was found to be in the range of 12.27% to 33.7% [10, 12, 15 - 18]. The prevalence of PPD in our study are in line with the study carried out in Pakistan, Iran and Sindhi where the prevalence was found to be 40%, 43.5% and 41% respectively [19-21]. The systematic review and meta-analysis done in low-and middle-income countries showed the prevalence of PPD between 11 and 40% and the pooled prevalence in the systematic review was found to be 34% among postpartum mothers during the COVID-19 pandemic [22, 23]. This variation in prevalence may be due to differences in socioeconomic status, variations in geography, and time among current and previous studies.

In our study, 48% of the mothers were literate and were less likely to have PPD as compared to illiterate mothers. This is similar to a previous study done in Nepal [24]. This indicates that literate mothers might be mentally strong to face the adverse situation. We found that mothers from nuclear families were 6.74 times more likely to have postpartum depression as compared to joint families. Mothers from joint families might feel that there are some people to look after their

Table 1: Sociodemographic factors associated with postpartum depression (n = 218). Values are presented as number.

Variable		Depressed (n = 85)	Non-depressed (n = 133)	COR	95% CI	AOR	95% CI
Education	Literate (n = 158)	54	104	0.48	0.26 - 0.88*	0.52	0.23 - 1.17
	Illiterate (n = 60)	31	29	1	7 (14.3)	42 (85.7)	
Family	Nuclear (n = 54)	37	17	5.26	2.70 - 10.23*	6.74	3.00 - 15.12**
	Joint (n = 164)	48	116	1		1	
Marriage type	Caste (n = 200)	75	125	0.48	0.18 - 1.27		
	Inter-caste (n = 18)	10	8	1			
Husband education	Literate (n = 201)	74	127	0.31	0.11 - 0.89*	0.34	0.00 - 1.32
	Illiterate (n = 17)	11	6	1		1	
Husband tobacco consumption	Yes (n = 94)	39	55	1.20	0.69 - 2.08		
	No (n = 124)	46	78	1			
Husband alcohol consumption	Yes (n = 70)	36	34	2.13	1.19 - 3.82*	2.47	1.18 - 5.18**
	No (n = 148)	49	99	1		1	

COR: Crude odds ratio, AOR: Adjusted odds ratio, CI: Confidence interval
**Variables entered to multivariate regression model. ** Statistically significant at p-value <0.05, Adjusted Model*

Table 2: Maternal and obstetric factors associated with postpartum depression (n = 218). Values are presented as number.

Variable		Depressed (n = 85)	Non-depressed (n = 133)	COR	95% CI	AOR	95% CI
Age at marriage (y)	< 20 (n = 37)	24	13	2.23	0.90 - 5.54		
	20 - 29 (n = 139)	42	97	0.52	0.25 - 1.06		
	≥ 30 (n = 42)	19	23	1			
Pregnancy planned	Yes (n = 144)	42	102	0.297	0.16 - 0.53*	0.22	0.11 - 0.47**
	No (n = 74)	43	31	1		1	
Delivery type	Vaginal (n = 75)	21	54	0.48	0.26 - 0.87*	0.37	0.17-0.81**
	CS (n = 143)	64	79	1		1	
Parity	Primiparous (n = 104)	38	66	0.82	0.47 - 1.41	1	
	Multiparous (n = 114)	47	67	1			
Sex of baby	Male (n = 97)	28	69	0.45	0.25 - 0.80*	0.33	0.16 -0.68**
	Female (n = 121)	57	64	1		1	
Birth weight of present child (kg)	< 2.5 (n = 45)	21	24	1.49	0.76 - 2.88		
	≤ 2.5 (n = 173)	64	109	1			
Low birth weight history	Yes (n = 23)	9	14	1.00	0.41 - 2.44		
	No (n = 195)	76	119	1			
Abortion	Yes (n = 52)	21	31	1.08	0.57 - 2.03		
	No (n = 166)	64	102	1			
Child preference	Boy (n = 73)	38	35	2.17	1.81 - 3.99*	2.93	1.32 - 6.50**
	Girl (n = 37)	11	26	0.84	0.37 - 1.90	1.51	0.54 - 4.17
	Any (n = 108)	36	72	1			
Husband present	Yes (n = 192)	70	122	0.42	0.18 - 0.96*	0.31	0.10 - 0.92**
	No (n = 26)	15	11	1		1	

COR: Crude odds ratio, AOR: Adjusted odds ratio, CI: Confidence interval
**Variables entered to multivariate regression model. ** Statistically significant at p-value <0.05, Adjusted Model*

children if she will be ill [25]. The risk of depression was higher among mothers whose husbands consumed alcohol, the findings were similar to a study done in Nepal, Dhanusha [14], and in contrast with the study conducted in the Rajbansi community of Nepal [17]. This variation in prevalence may be due to differences in socioeconomic status, variations in geography, and time among current and previous studies.

Mothers who had normal delivery were 63% less likely to have PPD than those who delivered through C-section. Our finding is similar to that of another study from southern Nepal and is in contrast from other studies which showed no association [12, 26]. Similar to the reports of a study done in Dhanusha and Biratnagar, Nepal, we found that mothers who had planned pregnancy were 77% less likely to have PPD compared to mothers who did not have their pregnancy planned [14]. Unplanned pregnancy may often lead to poor stress coping mechanism especially among socio-economically deprived population which can result in intensified mental health problems in postpartum period [27]. We did not find any association between parity and postpartum depression; similar results were obtained from Basrah, Iraq and Nepal [28]. We found that mothers who had given birth to male children were 67% less likely to have PPD compared to mothers who gave birth to female children. However, other studies conducted in Nepal and Ethiopia have found no association between the sex of a child and PPD [28, 29]. We also found that mothers whose family preference was son were 3 times more likely to have PPD and those who gave preference to a daughter were 1.5 times more likely to have post-partum depression as compared to the family whose preference was having any child. The reason may be the pressure for a male child in the family is high leading to stress and depression. Mothers whose husbands were present throughout pregnancy time were 68% less likely to have PPD postpartum

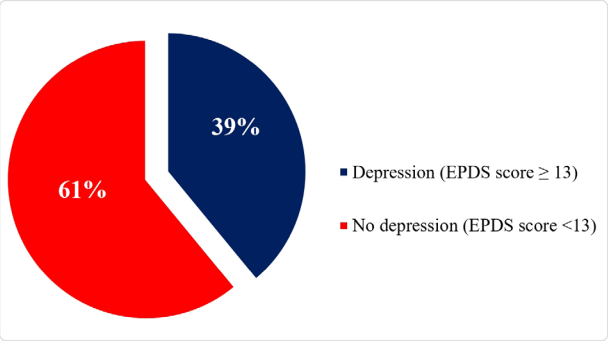

Figure 1: Prevalence of postpartum depression (PPD).

depression than mothers whose husbands were absent throughout the pregnancy period; similar findings were reported in a study from Dhanusha [14]. The reason may be support, spending time, care socializing with a partner during and after pregnancy prevents a woman from isolation, fear, and anxiety a situation commonly faced during PPD.

Since this study was a cross-sectional study, so causality could not be established with the associated factors and PPD. Furthermore, this study was a hospital-based study, so the actual picture of PPD in this region might not be revealed in its true sense. Moreover, social desirability bias might have crept in. Our findings suggest that PPD should be addressed in Maternal and child health (MCH) program with specific care in screening of the depression early so that effective support could be provided from pregnancy to post-partum period.

CONCLUSION

The prevalence of PPD was 39%. It was associated with illiterate mothers, living in a nuclear family, husband consuming alcohol, unplanned pregnancy, and husband absent throughout pregnancy, C-section mode of delivery, female sex of baby and male child preference.

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